



USFAA Discovery is published quarterly by the faculty of the US Air Force Academy (USFAA). It contains reports on USFAA cadet and faculty research, a complete list of current USFAA research points of contact, and a summary of recent awards and publications. All written material contained within reflects the opinions of the authors and editors and does not necessarily reflect current US Air Force or USFAA policy.

New Group Organizes within the Department Of Physics to Support Faculty and Cadet Research

by Dr. Delores Knipp and Maj Carl Kutsche

The newly formed Solar Terrestrial Interactions Group (STING) in the Department of Physics studies the physics of space and upper atmospheric environments. Organized to be a center of teaching and learning excellence in space environmental science, the group's activities fall into three general categories: astronomy for characterizing the behavior of stars like the Sun; space physics for characterizing solar-terrestrial interactions; and small satellite support for developing and integrating spacecraft payloads to investigate near-Earth plasma and upper atmospheric phenomena. The group currently supports the research efforts of 8 USFAA faculty members and 7 cadets.

The astronomy efforts, led by Dr. Derek Buzasi, focus on studying the characteristics of cool, low-mass and variable stars. Data used in these studies are collected through both space-based and ground-based sensors such as the Wide-Field Infrared Explorer (WIRE) satellite, the CHANDRA X-ray satellite, and the 61-cm Cassegrain Telescope at the USFAA Observatory. In addition, a number of hardware development efforts are underway, including ultra-efficient filters and high-speed Charge-Coupled Device (CCD) cameras. NASA provides a majority of the funds for this effort.

The Space Weather efforts, supported by Dr. Delores Knipp, Lt Col Geoff McHarg, Lt Col Francis Chun and Maj Ryan Haaland, include studies to understand large-scale electrodynamic response of the upper atmosphere to various forcing mechanisms, which start in the solar wind and are transferred to the upper atmosphere via various mechanisms including the Aurora Borealis. Research efforts also include investigating the effects and characteristics of upward directed lightening, called Sprites, which can affect the upper atmosphere from below. The National Science Foundation provides the bulk of the funds for Space Weather.

The Small Satellite team builds and integrates instruments for characterizing the behavior of upper atmospheric plasma and near-earth plasmas. Dr. Lon Enloe, Dr. Linda Krause, and Maj Ed Tomme lead this thrust. Various platforms are possible for these instruments, the primary of which is the USFAA family of FalconSat spacecraft. Other possible platforms used to conduct investigations include high-altitude balloons, rocket launches, and Space Shuttle and Space Station deployed missions. Data collected from these instruments allow faculty and cadets to investigate topics relevant to the Air Force. The Air Force Office of Scientific Research (AFOSR) funds this research.

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Back row (L to R): Maj Ed Tomme, Lt Col Geoff McHarg, Dr. Lon Enloe, and Dr. Derek Buzasi
Front Row (L to R): Maj Ryan Haaland, Dr. Delores Knipp, Dr. Linda Krause, and Lt Col Francis Chun

Department of English and Fine Arts

Great Teaching Derives Naturally from Scholarly Writing and Research

By Maj Brian Hanley

During an English Department gathering a couple of years ago, a colleague made a point of asserting that—whatever the merits of scholarly activity—perfecting one's teaching skills must remain the primary obligation of USFAA faculty members, the planted axiom of his argument being that scholarship comes directly at the expense of one's proficiency as an academic instructor. What appeared to vex my colleague so was what he took to be the self-centeredness and irrelevance of academic research. The faculty member gains in reputation by accumulating publications in his narrow field of interest, my friend had assumed, but surely the energy devoted to research and writing would be much more profitably spent on lesson preparation, curriculum development and review, and the like.

In this issue:

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Given the volume, range, and quality of scholarly work that we in the USAFA English Department produce, the idea that academic research and writing are somehow antagonistic to superior teaching strikes me as a mildly eccentric one. My own experience tells me that scholarship not only improves teaching but also advances an officer's professional development and, in various ways, adds something to USAFA's standing as a first-rate academic institution.

The most consequential relationship between research and teaching, as any professor who has tried to get something published in a peer-reviewed journal or by a university press knows, is that the author is placed in basically the same position as his students: one tries to write clearly and persuasively on what one assumes is an interesting and important subject. An offer of publication endorses the quality of our work, needless to say, but a rejection notice accompanied by worthwhile criticism from the reader is, as far as informing one's teaching is concerned, of equal value. I recall, for instance, the reader's report attached to the first draft of my book. I was told that the piece had much to commend it, but that I hadn't taken full advantage of my research, nor did I seem entirely aware of what the academic marketplace was looking for at the time. After three months of revision, the manuscript was accepted.

Regularly submitting manuscripts for publication encourages us to approach course grading in a similar way, that is, we should call attention to praiseworthy habits of mind and remember that errors are an inevitable part of learning—even as we recognize that supremacy in any field of knowledge often takes a lifetime to achieve. The ultimate objective behind my approach to grading—my evaluation cover sheet contains two categories: "Meritorious Aspects of the Paper" and "Areas That Need Work"—is to help the student become a more effective writer rather than merely to tally errors on any given paper, or to emphasize not so much what a given student knows but the extent to which he falls short of an abstract

course standard. When I haven't submitted anything for publication over a period of a few months or so, I find that I must fight the temptation to measure my students as an exacting pedagogue might: every mistake is carefully noted and assigned its due weight, thus giving the commentary on even praiseworthy papers and exams an admonitory cast. Writing for publication recalls to my mind the immense difficulty of understanding extremely difficult subject matter, especially when one is encountering the material for the first time, and so encourages me to see myself in the classroom as a coach, an advisor, rather than as a bloodless pedant who, from the point of view of his students, takes unseemly pleasure in demonstrating to them how much more I know about the subject than they do. Put it another way, scholarly activity forces on me a sense of humility and a capacity to sympathize with my students that does not naturally flourish given the sort of authority that teachers—at a service academy in particular—are expected to wield.

Scholarly achievement helps me in the classroom in other ways. To begin with, the promotion to associate professor—dependent as it is on scholarly achievement—allows teachers to join the Faculty Forum. Faculty Forum members serve on Academic Review Committees and Cadet Leadership Selection Boards; they are also asked to work on ad hoc committees that provide advice to the Dean on crucial academic and administrative matters. It scarcely needs mentioning that activities of this kind inform the judgment of teachers and course directors in important ways. Of equal significance is that a teacher who has published material in his field contributes his mite to the reputation of the Air Force Academy—no small thing when we bear in mind that our exalted academic standing attracts the interest of the intelligent young as they consider whether to accept an appointment to USAFA or, say, Wabash College or MIT. Scholarly achievement, then, allows instructors to make crucial contributions to the Academy's mission. So my advice to junior and senior faculty alike is:

publish and encourage your subordinates to publish or at least try to get published—because nothing but good can come of it.

Department Research News

Department of History

The Department of History remained busy during Fall 2000, hosting the 19th Military History Symposium on "The American Prisoner of War Experience" from 14-16 November. Headed by Dr. John Jennings, the Symposium attracted national attention, and was filmed in part by C-SPAN. Preparations for and execution of the Symposium consumed most DFH energies throughout the fall, but will result in proceedings co-edited by Maj Ben Jones and Captain Grant Weller to be published in late 2001 or early 2002. Maj Jones delivered "The Moon is Down: The Jedburghs in support of the French Resistance" to the Northern Great Plains History Conference, in Mankato MN in late September. Captains Grant Weller and Mark Witzel submitted seven and three articles, respectively, to the Encyclopedia of Airpower being edited by Walter Boyne. Dr. Michael Neiberg co-authored with DFENG's Colonel Tom Bowie and Dr. Donald Anderson "An Interview with Philip Caputo" for the journal *War, Literature and the Arts* (WLA). Dr. Neiberg is working on several other forthcoming periodical articles, four articles for History in Dispute: World War I (edited by Dr. Dennis Showalter of Colorado College, adjunct DFH instructor and President of the Society for Military History), and a book review for WLA of Daniel Hoffman's Zone of the Interior. Dr. Jacob Abadi's "Constraints and Adjustments in Greece's Policy towards Israel" appeared in the Fall 2000 issue of Mediterranean Quarterly; several other articles are pending publication. Dr. Jeanne Heidler's 2700-page, five-volume Encyclopedia of the American Civil War: A Political, Social, and Military History appeared in December to laudatory reviews, a leading Civil War historian describing it as the new reference standard. Lt Col John Shaw spoke to the USS Carlisle's reunion dinner on teaching military history at USAFA, and participated in discussions at Gettysburg College on "Why the North won the Vietnam War." His editing of the Harmon Memorial Lectures on Military History reached the ¾ mark, with the series now posted on the DFH website for scholars' use worldwide.

Directorate of Education Institute for National Security Studies

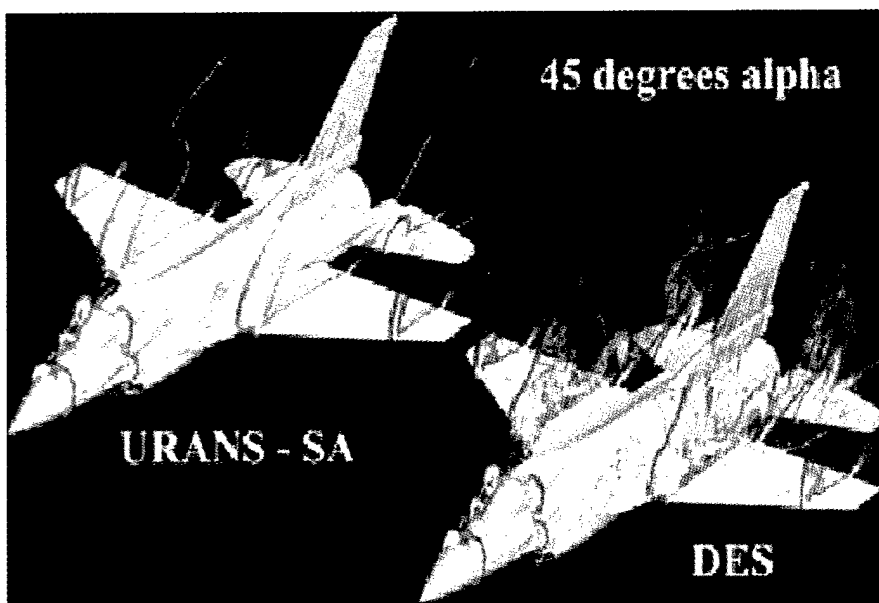
On 17 October 2000, the Air Force Institute for National Security Studies (INSS) hosted a visit from 14 European members of Parliament who are members of the NATO Parliamentary Assembly Science and Technology Committee. This VIP group visited Colorado Springs in an effort to learn more about US Defense Policy. Dr. James Smith briefed the group on INSS research programs with particular emphasis towards

ongoing Arms Control, Counterproliferation and Space Policy research. Dr. Peg Halloran from the Institute for Information Technology Application (IITA) shared IITA research highlights. After dining on the Mitchell Hall staff tower with Lt General Dallager, the Parliamentarians visited Air Force Space Command at Peterson Air Force Base in order to learn more about National Missile Defense and the shared Canadian-US Early Warning System. Mr. Frank Cook, Vice President of the Assembly (and Member of Parliament, United Kingdom), commented that his group was extremely impressed with the Academy and the quality and content of the briefings provided during the day.



The NATO Parliamentary Assembly Science and Technology Committee stop for a group photo while en-route to dine with cadets

Department of Aeronautics



F-16 at 45 degrees angle of attack

The Aeronautics Department in conjunction with Kyle Squires of Arizona State University, and the Air Force Research Lab, Computational Sciences Branch has been conducting research on the numerical analysis of full aircraft with massive separation (i.e. at high angles of attack). This project is sponsored by AFOSR, and was awarded "challenge" status by the DoD High Performance computing center (HPC), granting 800,000 cpu hours on massively parallel computers. Using this capability, the unsteady flow past an F16 at 45 degrees angle of attack was predicted in only 12 hours by using 432 processors. In addition excellent results have been obtained in predicting forebody aerodynamics at high alpha, and abrupt wing stall at transonic speeds. In response to this encouraging work, HPC has added 500,000 cpu hours to the project, giving the Academy unprecedented capabilities.

USAFA Research Awards

C1C Jennifer Renae Wiseman wins the Thomas D. Moore Award

The Thomas D. Moore Award is presented to the cadet selected as having the most outstanding cadet summer research project. The award is named in honor of Maj Thomas D. Moore who taught at USAFA from 1961-1967. During that time he served in the Department of Physics and Electrical Engineering, as well as the Directorate of Research and Development. He had already received orders to return to school for a PhD in computer science when he was killed in a plane crash in Vietnam. Mrs. Barbara Moore sponsors the award in memory of her husband. All cadets participating in the Cadet Summer Research Program (CSRP) are eligible for the award. A committee consisting of the CSRP director (Capt Dave Lawyer, Department of Economics and Geography) and a representative from each of the four academic divisions (Basic Sciences, Engineering, Humanities, and Social Sciences) selects the award winner based on quality of research, publication potential, catalyst for further research, and impact on the sponsoring organization's mission. C1C Jennifer Renae Wiseman, from Cadet Squadron 19, won the Thomas D. Moore Award for Cadet Summer Research for her work at the Los Alamos National Laboratory. C1C Wiseman's work on numerical methods for computational fluid dynamics will have a national impact on modeling and simulation prediction of bomb blast patterns and yields and airflow across aircraft wings. Many of the applications that will use her research are classified and are of national importance. The quality of her work is clearly reflected in the invitations she and her mentor, Dr. Jerry Brock, received to present their work at international conferences, to include

the 2000 Nuclear Explosives Code Development Conference in California and the Conference on Computational Physics in Queensland, Australia. In addition, she has coauthored two publications with a third publication well into development. C1C Wiseman is majoring in mathematics.



C1C Wiseman accepts the Thomas D. Moore Award from the Dean of the Faculty, Brigadier General David A. Wagie. To the right is C1C Wiseman's research mentor, Dr. Jerry Brock, from Los Alamos National Laboratory.

USAFA Research Awards

The Dean of the Faculty, Brigadier General David A. Wagie, recognized six Academy members during the USAFA Research Awards Ceremony held on 17 November 2000. One of these winners, C1C Jennifer Renae Wiseman, is profiled above. Colonel Jim Heald, the Vice Commander of the Air Force Research Laboratory (AFRL), was the guest speaker for the event. This annual ceremony recognizes the importance of research to the Academy's mission and serves as an acknowledgement of the significant research conducted by our faculty and cadets. Col Heald recognized the contribution of USAFA researchers to the Air Force mission, and lauded the close ties USAFA researchers have with the research



*Colonel Jim Heald,
Vice Commander of the
Air Force Research
Laboratory*

endeavors sponsored by AFRL organizations.

There were two winners of the Frank J. Seiler Award for Research Excellence. The award recognizes the outstanding researcher conducting basic scientific research. Each award includes a \$2500 research grant from the Air Force Office of Scientific Research. The first winner was Capt James R. Forsythe of the Department of Aeronautics. Capt Forsythe won the award for his computational modeling of full aircraft at high angles of attack experiencing massive flow separation. The prediction of turbulent flows, present for the vast majority of practical flows over aircraft, has been the greatest challenge for those in the field of computational modeling. One of his

turbulence models was used to predict the flow features that caused the abrupt wing stall of the F-18 at transonic speeds for the Navy Research Lab, matching the experimental stall angle of attack to within less than one degree. He supports the Air Force Research Laboratory at Eglin Air Force Base with his Mach 4 predictions of flow over a supersonic projectile. His models matched the USAFA experimental and AFRL flight test data to within 10%. He has brought in over \$80,000 of research funds to USAFA and he is the system administrator for a 64 processor PC cluster which has given USAFA the ability to run full aircraft simulations in less than a day - something previously only possible for large aircraft companies. His efforts have greatly increased the Air Force's capabilities in accurately predicting turbulent flows over aircraft, and he has demonstrated this capability to the academic and aerospace community. He has worked with several cadets on his research projects and has enriched the students' understanding of complex computational modeling in the core aeronautics course at USAFA.



Capt James R. Forsythe
Frank J. Seiler Research Award

The second winner of the Frank J. Seiler Award for Research Excellence was Dr. Michael J. Wilcox of the Department of Biology. Dr. Wilcox won the award for his study of an "artificial eye" machine-vision system to address serious shortfalls in image processing timing and accuracy.

Scientists have long recognized that animal vision systems can do many things far better than machines. This superior visual resolution, attained by animals, is known as hyperacuity. By learning how animals process information, perhaps we can implement the same approach using machines. Dr. Wilcox developed a computer simulation that could achieve hyperacuity using optical termination employed by living photoreceptors and the neural processing he learned from intracellular recordings from the common housefly compound eye.



Dr. Michael J. Wilcox
Frank J. Seiler Research Award

Dr. Wilcox then designed, manufactured, and tested the first optoelectronic chip that processes visual information similarly to insect retinas. The discreet electronic circuitry encodes high-resolution information from a photo receptor array. The parallel, analog nature of this circuitry means that no central processing unit is needed to process the information. His silicon chip design performance suggests hyperacuity and testing has exceeded the housefly's own visual performance. Dr. Wilcox's lab is the only machine-vision research group that has completed the cycle of development from the basic aspects to the real thing. Mounting this technology on an autonomous tracking vehicle will radically improve our defensive missile capability. He is currently funded by the Naval Air Warfare Center. He continues to include cadets in every aspect of this work.

Lt Col Stephen Slate of the Department of Economics and Geography won the McDermott Research Award for Research Excellence for his work in acquisition, defense, and information economics. This award recognizes the outstanding researcher in the Humanities or Social Sciences disciplines. The award includes a \$2500 research grant from the McDermott Chair. The defense-related research agenda Lt Col Slate is pursuing covers many of the economic problems faced by the United States Armed Forces.



Lt Col Stephen Slate
McDermott Research Award

Lt Col Slate has brought his substantial research expertise to bear on the problems of alliance burden sharing, research tournaments, and information warfare. He has been engaged in vital research designed to improve our understanding of contemporary problems in acquisition and military strategy. The Defense Systems Management College, the Institute for National Security Studies, and the Institute for Information Technology Applications have funded his work. He has also published his work in economic analysis of contract law.

Dr. James M. Smith, the Director of the Institute for National Security Studies (INSS), won a McDermott Research Award Honorable Mention.

Dr. Smith was nominated by the 34th Education Group. Dr. Smith has published several papers on Presidential prerogative and military operations other than war, and national security issues in a nuclear, biological, and chemical warfare environment. He has served as chair and discussant on two research conference panels dealing with current issues in military operations and counterproliferation. Due to his prior experience on military service culture, he was invited by the Air Staff to participate on the USAF Chief of Staff's "Developing Aerospace Leaders Initiative." As a consequence, he has become an important contributor to the initiative, presenting at many meetings and CORONA conferences on such varied topics as: USAFA's contribution to Aerospace Leadership, Developing Aerospace Strategists, Culture Change and Innovation in the USAF, Universal Officer Competencies, and Designating the Transitional Leader from Air to Aerospace.



Dr. James M. Smith
Honorable Mention,
McDermott Research Award

The Institute for National Security Studies (INSS) is located at the Academy. Each year, they present the Outstanding USAFA INSS Research Award. Capt Stephen D. Kiser of the Department of Political Science won the award for his work addressing environmental security. His paper "Water: The Hydraulic Parameter of Conflict in the Middle East and North

Africa" was judged the best product, and that having the most relevance to USAF and national security policy, of all submissions authored by a member of the USAFA cadet wing, staff, or faculty in 1999. The award includes a research grant of \$2000. This research was published as the Institute for National Security Studies Occasional Paper Number 35 in September 2000. The research addresses two case studies of cross-border water contention as an illustration of how critical natural resources issues can contribute to instability and potential conflict in today's world. This work has generated interest and recognition both within government and within the academic community.



Capt Stephen D. Kiser
Outstanding USAFA
INSS Research Award

Publications and Presentations

Center for Character Development

Publications:

MALMSTROM, F. V., & West, J. E. "Study evidence shows support for honor system." *CheckPoints*, September 2000.

MALMSTROM, F. V. "Seasonal affective disorder." *Flying Safety*, October 2000.

ROBBINS, T. L., Summers, T. P., Miller, J. L. and Hendrix, W.H. (2000). "Using the group value model to explain the role of non-instrumental justice in distinguishing the

effects of distributive and procedural justice." *Journal of Occupational and Organizational Psychology*, 73, 511-518.

34th Education Group

Publications:

KAROLICK, D.M., Whyte, M.M. and Carey, D. "Field Dependent/Independent and the Needs of Students in a Web-Based Instructional Environment." *Proceedings of ED-MEDIA 2000 World Conference on Educational Multimedia, Hypermedia & Telecommunications, Montreal Canada*; 26 June - 1 July 2000.

SMITH, J. M. "Expeditionary Leaders, CINCs, and Chairmen: Shaping USAF Officers for Leadership Roles in the 21st Century." *Aerospace Power Journal*, Winter 2000.

SMITH, J. M. "Aerospace Professionalism Across the Academy: Focusing on USAFA's Four Products." *USAFA Educator*, Fall 2000.

Presentations:

ATKINSON, C.L and Krupnick, C. "Slovakia and Changing Concepts of Security in Europe." INSS Research Results Conference, US Air Force Academy, CO, 13-14 November 2000.

BERRY, W. "IMET Civil-Military Relations Seminar for Government, Military, and NGO Representatives." Port Moresby, Papua New Guinea, 4-8 December 2000.

DONLEY, P.H. and Krupnick, C. "The European Union and a Nuclear Security and Defense Policy." INSS Research Results Conference, US Air Force Academy, CO, 13-14 November 2000.

DROHAN, T.A. "The US-Japan Security Relationship." Annual International Affairs Fellows Conference of the Council on Foreign Relations, Council on Foreign Relations, New York, 27 October 2000.

DROHAN, T.A. Panel chair, "East Asian Security: Questions of States." American Political Science Association and International Studies Association Conference on Globalization and Security, Loews Giorgio Hotel, Denver, CO, 10 November 2000.

KRUPNICK, C.A. "The United States and Europe Under the Next Administration." Election 2000: Decisions and Consequences conference sponsored by the Department of Political Science, Baylor University, Waco, TX, 17-18 October 2000.

KRUPNICK, C.A. "The Kursk and Nuclear Proliferation." 28th Annual International Conference sponsored by the US Air Force Academy and the Colorado Council of International Organization (CCIO), US Air Force Academy, CO, 27 October 2000.

SMITH, J.M. "USAF Research in Arms Control, Counterproliferation, Space Policy, Environmental Security, and Information Operations: Current Issues and Trans-Atlantic Implications." Science and Technology Committee, NATO Parliamentary Assembly, US Air Force Academy, CO, 17 October 2000.

SMITH, J.M. "Non-Strategic Nuclear Weapons and Arms Control: The Way Ahead." HQ USAF Conference on Dealing with Non-Strategic Nuclear Weapons, Airlie, VA, 2-3 November 2000.

SMITH, J.M. "Environmental Federalism and the U.S. Military: The Decade Ahead." Environmental Challenges in the Next Decade: Partners in Environmental Technology Symposium, Washington DC, 28 November 2000.

Department of Aeronautics

Presentations:

MITCHELL, T. "Vortex Breakdown over Slender Wings." NATO RTO AVT Task Group #080 Minutes, Ankara, Turkey, October 2000.

YECHOUT, T. and Chadsey, D. "AC-130H Drag Reduction Flight Test Program." Joint Flight Test Planning Mtg, Edwards AFB, Edward AFB, CA, November 2000.

YECHOUT, T. and Chadsey, D. "Detailed Flight Test Plan for the AC-130H Drag Reduction Program." AFSOC / 18th Flight

Test Squadron and SPO, Hurlburt Field, FL, December 2000.

Department of Astronautics

Presentations:

SELLERS, Jerry. "Spacecraft Systems Integration: Theory and Practice in the USAFA Small Satellite Program," Core Technologies for Space Systems, Colorado Springs, CO, November 2000.

SELLERS, Jerry. "Operations Research in Satellite System Design Panel Discussion," Core Technologies for Space Systems, Colorado Springs, CO, November 2000.

Department Of Behavioral Science

Publications:

PRINGLE, H.L. Irwin, D.E., Kramer, A.F. and Atchley, P. (in press). "The Role of Attentional Breadth In Perceptual Change Detection." *Psychonomic Bulletin & Review*.

SAMUELS, S. M. and Gibb, R. (in press). "Self-Efficacy Assessment and Generalization in Physical Education Courses." *Journal of Applied Social Psychology*.

Presentations:

PRINGLE, H.L., Kramer, A.F. and Irwin, D.E. (2000). "The Roles of Scene Characteristics, Memory, and Attentional Breadth on Scene Representation." Poster presented at *Psycho-nomics*, New Orleans, LA, 16-19 November 2000.

PORTER, D.B. & Angelo, T.A. (2001). "The Learning Organization as a Model for Successful Self-Studies." 2001: A Collection of Papers on Self-Study and Institutional Improvement. Chicago IL: North Central Association of Colleges and Schools Higher Learning Commission.

Proceedings:

PATREY, J., Cowden, A. and Burns, J. "Data-driven Knowledge Engineering." Proceedings of the Interservice/Industry

Training, Simulation and Education Conference, 2000.

PATREY, J., Reeves, L., Stanney, K. and Breaux, R.B. "The Development of Information Visualization Design Guidelines." Proceedings of the Interservice/Industry Training, Simulation and Education Conference, 2000.

Department of Biology

Publications:

HALE, D. and Eicher, E. "Meiotic Behavior of the Sex Chromosomes in XY Female an Hermaphroditic Mice of the C57BL/6J-Y POS Strain." *Cytogenetics and Cell Genetics*, 90:160, November 2000.

HALE, D., Unangst, E., Hall, Z. and Hendrickson, J. "Use of chromosomal markers for distinguishing *Peromyscus maniculatus* and *P. leucopus* on the USAFA reservation." *Peromyscus Newsletter*, 30:14, October 2000.

HALL, D. and de Andrade, M. "A Comparison of Genetic Software Packages Available for Assessing Linkage on Chromosome 5 Using a Variance Components Approach." Genetic Analysis Workshop 12 Proceedings, October 2000.

HALLORAN, M. and Bekoff, M. "Home Range Use by Abert Squirrels: A Comparative Analysis." *Southwestern Naturalist*, 45:253-258, December 2000.

NOYD, R. "A Primer on Concept Maps." *Journal of Cooperation & Collaboration in Teaching*, 10(1):8-11, November 2000.

NOYD, R. "Mycology Reference Cards." American Phytopathological Society Press, October 2000.

Presentations:

NOYD, R. "Overteaching: When is Less Really More?" Front Range Community College, Colorado Springs, CO, October 2000.

PALMER, L., Hall, D., Jacobs, K. and Bosken, C. "Linkage Analysis of Single regions." Genetics Analysis Workshop 12, San Antonio TX, San Antonio, TX, October 2000.

Department of Chemistry

Publications:

MORGAN, M., Amend, J. and Whitla, A. "Inexpensive Digital Monitoring of Signals from a Spectronic-20 Spectrophotometer." Journal of Chemical Education, 77/2, October 2000.

RACICOT, R. and Wilkes, J. "USAFA's Material Science Degree." Journal of Materials Education, 21 November 2000.

Presentations:

C1C KADRI, O. and Wilcox M. "Surface Tension Controls Capsule Thickness and Collagen Orientation in Glaucoma Shunt Devices" at the Rocky Mountain Bioengineering Symposium, Copper Mountain CO, April 2001.

HUMPHREY, I. "Isolation of Green Fluorescent Protein Chromophore," Amer Assn Coll & Univ briefing, United States Air Force Academy, CO, October 2000.

WILKES, J. "Hydrogen Sources Review." Hydrogen Sources Program Review, Ball Aerospace & Technologies, Boulder, CO, October 2000.

Directorate Of Education

Publications:

MILLIS, B. "Cooperative Learning: It's Here to Stay," *Teaching Excellence: Toward the Best in the Academy*, 12, no. 8, Professional and Organizational Development (POD) Network in Higher Education, " 2000-2001.

TALBOT, B. "Balancing in the Balkans" in the journal of *Nationalism and Ethnic Politics*, and published book review, Fall 2000.

Conferences:

MILLIS, B. and Cottell, P. "Using Cooperative Academic Games to Enhance Learning," Professional and Organizational Development (POD) Network in Higher Education Annual Conference, Vancouver, Canada, November, 2000.

MILLIS, B. and Davidson, N. "Using Classroom Assessment and Other Cooperative Techniques to Promote Student Learning." Professional and Organizational Development (POD) Network in Higher Education Annual Conference, Vancouver, Canada, November 2000.

MILLIS, B. and Cottell, P. Preconference workshop, "Cooperative Learning for Higher Education Faculty." 20th Annual Lilly Teaching Conference, Oxford, OH, November 2000.

MILLIS, B. "Responsive, Responsible Peer Review: Colleagues Helping Colleagues" 20th Annual Lilly Teaching Conference, Oxford, OH, November 2000.

MILLIS, B. "Using Creative Games to Further Learning and Assessment Goals." 20th Annual Lilly Teaching Conference, Oxford, OH, November 2000.

TALBOT, B. "Globalism, Institutions, And United States Leadership: Prolonging The Unipolar Moment" at the International Security Studies Section Annual Conference, Fall 2000.

Conferences:

TALBOT, B. Panelist "U.S. Role in a Changing World: Redefining Security Priorities" at the Colorado Council of International Organizations Annual Conference, October 2000.

Department of Economics and Geography

Publications:

HAVERLUK, T. "Identity Construction and Chile Peppers in Pueblo, Colorado," article for publication in *The International Journal of Food and Foodways*.

Presentations:

RAPPAPORT, N. and Berndt, E.R. "Price and Quality of Desktop and Mobile Personal Computers: A Quarter Century of History," at the National Bureau of Economic Research Summer Institute 2000 session on Price, Output, and Productivity Measurement, 2000.

Department of Electrical Engineering

Publications:

N.E. ISLAM, E., Schoenberg, J.S.H. and Joshi, R.P. "Compensation Mechanisms and The Response of High Resistivity GaAs Photoconductive Switches During High Power Applications." *IEEE Transactions on Plasma Science*, Volume 28, No. 5 October 2000.

Department of English and Fine Arts

Publications:

HANLEY, J., "Samuel Johnson as Book Reviewer. Newark, DE: Univ. of Delaware Press 2000.

MEREDITH, J.H., "Understanding the Literature of World War II." Greenwich, CT: Greenwood Press 2000.

BONNER, T., "Buffalo Gap, Texas." *The Beat of the Forum*. New Orleans: Poetry Forum, 2000. p.99

BONNER, T., "The Cars of Colorado." *The Morris Gazette*. September 2000.

BONNER, T., "English at the Air Force Academy." *The Literary Way* [newsletter] Fall 2000.

KING, R. "Border Crossings in the Mexican American War." *The Legacy of the Mexican and Spanish-American Wars: Legal, Literary, and Historical Perspectives*. Eds. Gary Keller and Cordelia Candelaria. Tempe AZ: Bilingual Press/Editorial Bilingüe, 2000. 63 - 85.

ANDERSON, D. "A Rumor of War: A Conversation with Philip Caputo at 58." *War, Literature & the Arts: An International Journal of the Humanities* 12.1 (interview, with the assistance of Michael S. Neiberg and Thomas G. Bowie, Jr.), Spring/Summer 2000.

ANDERSON, D. "Accident." *Weber Studies* 18.0, personal essay, Summer 2000.

ANDERSON, D., "The Peacock Throne." *Columbia* 33, fiction, Winter 2000.

ANDERSON, D. "Fire Road." *Short Story* (fiction). First Place, Society for the Study of the Short Story.

ANDERSON, D. Contest; invited to read winning story at the 6th Annual International Conference on the Short Story in English, University of Iowa.

Department of Foreign Languages

Publications:

GUAJARDO, Y. and Keaton, R. "CD ROM: Introduction to Japanese Literature, Second Edition." July 2000.

GUAJARDO, Y. and Fukazawa, E. "CD-ROM: Japanese Government & Constitution." July 2000.

MUELLER, G. "Beyond the 'Linguist': Global Engagement Skills." *Applied Language Learning: Millennium Edition*, Volume 11 Number 1, January 2000.

Presentations:

CANTON, R. "Culture in the Classroom: Embracing the Culture of Technology." Colorado Conference of Foreign Language Teachers, Colorado Springs, CO, February 2000.

CANTON, R. "PowerPoint for Course Development/HTML uses." Arizona Language Association, Tempe, AZ, June 2000.

GUAJARDO, Y. and CJLEAS' Technology Development Committee. "Communication & Networking - A Statewide Effort to Connect Teachers." CCFLT Spring Conference, Colorado Springs, February 2000.

GUAJARDO, Y. and Canton, R.. "Language and Technology Workshop." Arizona Foreign Language Association, Tempe, Arizona, June 2000.

GUAJARDO, Y. "Motivating Students to Take the Initiative While Achieving Professionalism & Accountability in Their Projects." Faculty Development Conference, Colorado Springs, June 2000.

GUAJARDO, Y. "Promoting Student Professionalism - The Tangible Goals of Foreign Language Learning." Colorado Council of Foreign Language Teachers, Colorado Springs, CO, February 2000.

GUAJARDO, Y. and Sutherland, R. "Student-Teacher Collaboration in Courseware Production." CCFLT Spring Conference, Tucson, Arizona, June 2000.

HEALY, S. and Valentine, S. "Language Learning Through Music and Video." Colorado Conference of Foreign Language Teachers, Colorado Springs, CO, February 2000.

SMITH, N. "French Language and Culture." Annual Conference for Second Language Educators, Fairbanks, Alaska, July 2000.

SUPINSKI, S. "Russian Language Development and Maintenance at a Distance: Methodology and Technology." Second Annual Language Conference, Monterey, CA, August 2000.

SUTHERLAND, R. "Inexpensive Production of Online Materials for Distance Learning." Second Annual Language Conference, Monterey, CA, August 2000.

SUTHERLAND, R., Guajardo, Y. and Brehm, A. "Joint Courseware Production." Colorado Council of Foreign Language Teachers, Colorado Springs, CO, February 2000.

SUTHERLAND, R. and Guajardo, Y. "Student-Teacher Collaboration in Courseware Production." CALICO Conference, Tucson, Arizona, June 2000.

Department of History

Publications:

FARQUHAR, J. T. "Richard I. Bong," "Thomas McGuire," "Arthur Coningham," "Arthur Tedder," "John Slessor," "Otto P. Weyland," and "Elwood 'Pete' Quesada," *Encyclopedia of Air Power*, Walter J. Boyne, ed.

FARQUHAR, J. T. "Offutt Air Force Base," *Encyclopedia of the Midwest*, David C. Skaggs, ed.

Presentations:

FARQUHAR, J. T. "Foundations of Air Power: A Look at the Origins of the US Air Force, 1783-1918," Military Order of the World Wars Banquet, Colorado Springs, CO, 27 October 2000.

FARQUHAR, J. T. "The Rogue Pilot: A Leadership Case Study," US

SPACECOM Squadron Commander's Course, Peterson AFB, CO, 9 November 2000.

Department of Management

FARQUHAR, J. T. "The Korean Air War: The Communist View," Banquet Address, Undergraduate Pilot Training Class 551 Reunion, Colorado Springs, CO, 14 September 2000.

Publications:

BARKER, J. and Wright, B. "Assessing Concertive Control in the Team Environment." *Journal of Occupational and Organizational Psychology*, Volume 73, Number 3, October 2000.

GREEN, S. and Hornyak, M. "Service Learning at a Service Academy." *Academic Exchange Quarterly*, 4/4, December 2000.

Presentations:

BARKER, J. "Organizational Culture on the Edge of Chaos." University of Colorado Boulder Management Dept., Boulder, CO, October 2000.

BARKER, J. "The Discipline of Teamwork." Colorado State University School of Business, Fort Collins, CO, October 2000.

Department of Mathematical Sciences

Publications:

HADFIELD, S. "Testbank 2000." October 2000.

HADFIELD, S. "USAFA Research Tracking Ver 2.01." November 2000.

HADFIELD, S. "USAFA Research Tracking Ver 2.0." November 2000.

HADFIELD, S. "OPS TEST Software Version 2.3." December 2000.

HADFIELD, S. "USAFA Research Tracking Ver 2.00." November 2000.

Presentations:

BEVAN, C. and Gilchrist, R. "Cadet Summer Research Program: A Lesson in How Forecasting is Really Done." INFORMS National Meeting, San Antonio, TX, November 2000.

HADFIELD, S., Warner, B. and Chen, A.. "Navigating the Research Tracking Database." CEE Workshop, USAFA, CO, November 2000.

HERZINGER, K. "Numerical Semigroup and Commutative Algebra." University of Nebraska, Lincoln, Lincoln, NE, October 2000.

WARNER, B. "Continuous Improvement in Cardiac Surgery Program." *Probability And Statistics Colloquium*, Boulder, CO, October 2000.

WARNER, B. and Revak, M. "Tactile Statistics." CCTM Annual Conference, Denver, Colorado, October 2000.

ZARYBNISKY, E. and R. Gilchrist. "Supply and Maintenance Effects on the F-16 Mission Capability Rates." INFORMS National Meeting, San Antonio, TX, November 2000.

Department of Philosophy

Publications:

BERTHA, C. and Nevin, H. "The Domestic Role of the National Guard and Reserves" prepared paper to present to the 2001 Joint Services Conference on Professional Ethics, 2000.

HITTINGER, J.P. and Fuller, T. Maritain's Reassessment of the Liberal State" in volume.

HITTINGER, J.P. and Fuller, T. "The Cooperation of Church and State: Argument from the Unity of the Person," introduction and a chapter.

HITTINGER, J.P. "The Failure of Modernism" a book review for the *Review of Metaphysics*.

RHODES, W.H. "Professional Identity and the Future of the Air Force: Revitalizing Military Education" INSS paper. Copy requested by DAL, 2000.

RHODES, W.H. and Kima, M. "Reconciling Civilian and Military Views on the Ethics of Nuclear Deterrence" from *Philosophy 311* paper, 2000.

Presentations:

RHODES, W.H. "On Choosing a Character: Understanding Moral Identity" Air Force Humanities Institute presentation.

WETMORE, D.R. "Human Rights, New Technology and the Just War Tradition" prepared paper to present to the 2001 Joint Services Conference on Professional Ethics.

Conferences:

HITTINGER, J.P. Thomism at St John Vienney Seminary, Denver CO, lecture.

FICARROTTA, J.C. Mountain-Plains Philosophy Conference, Executive Committee Member.

FICARROTTA, J.C. Program Director, 2001 Joint Services Conference on Professional Ethics; assembled annual program for JSOCPE; manages the JSOCPE website.

RHODES, W.H. "Empirical Research in Moral Development and Military Character Development Efforts" invited Presenter at US Army War College's Anton Myrer Leadership Symposium "Ethics and Strategic Leadership: Concepts and Hard Choices," 2000.

ROHDES, W.H. "Fostering Commitment: Responsibility, Experiential Learning, and Vividness" prepared to present at the Institute on College Student Values Conference, 2000.

RHODES, W.H. "The Ethics of Casualties" conference sponsored by USNA's Center for the Study of Professional Military Ethics, 2000.

Department of Physics

Publications:

OBRINGER, J. and Johnson, M. "Gene Profiling of Cultured Human Retinal Pigment Epithelial Cells after High Energy, Ultrashort Pulse Laser Light Exposure." Amer. Association for the Advancement of Science, Vol 40 No 2, November 2000.

Presentations:

KNIPP, D., Chun, F., Hairston, M. and Ridley, A. "Auroral Zone Heating Comparisons for September 1999." Solar Terrestrial Energy Program, Sapporo, Japan, October 2000.

KNIPP, D., Lin, C.H. and Emery, B. "Ionospheric Electrodynamical Response to the Solar Wind Void of 10-12 May 1999." Solar Terrestrial Energy Program, Sapporo, Japan, October 2000.

KNIPP, D. "Is the Weather in Space Frightful?" Am. Inst. Of Astronautics and Aeronautics, US Air Force Academy, CO, October 2000.

KNIPP, D., Rich, F., Chun, F. and Krause, L. "Upper Atmosphere Heat Budget Over The Last Two Decades." Solar Terrestrial Energy Program, Sapporo, Japan, October 2000.

KRAUSE, L. and Knipp, D. "Impact of the 2-5 May 1998 Geomagnetic Storm Activity on the DSCS III B-7 Spacecraft Frame Potential." Solar-Terrestrial Energy Program Conference, Sapporo, Japan, October 2000.

KRAUSE, L. and Knipp, D. "Impact of the 2-5 May 1998 Geomagnetic Storm Activity on the DSCS III B-7 Spacecraft Frame Potential." Solar Terrestrial Energy Program, Sapporo, Japan, October 2000.

SCHOU, J. and Buzasi, D. "Observations of P-Modes in Alpha Cen." Helio and Asteroseismology at the Dawn of the Mill, Tenerife, Spain, October 2000.

Department of Political Science

Publications:

ANDERSON, M. "Racial Politics in Contemporary Brazil and Negotiating National Identity." Nationalism and Ethnic Politics, 6/3, October 2000.

MCCARTHY, J. "Achieving Information Dominance." October 2000.

MCCARTHY, J. "Command and Control for Air Force Operations." October 2000.

MORRISON, J. "Religion and the American Constitutional Experiment." Journal of Legal Studies, 10, October 2000.

PILCH, F. "Kosovo: How Myths and Truths Started a War." Journal of Legal Studies, 10, October 2000.

PILCH, F. "Refugees in an Age of Genocide." Journal of Nationalism and Ethnic Politics, 6/3, October 2000.

TALBOT, B. "Balancing in the Balkans." Nationalism and Ethnic Politics, 6/3, October 2000.

THOMAS, T. "Slumlords: Aerospace Power in Urban Fights." DoD Urban Operations Journal, online, October 2000.

Presentations:

BIDLACK, H. "Thomas Jefferson - Alexander Hamilton Debate." University of Michigan, Ann Arbor, Michigan, December 2000.

BOLT, P. "Taiwan-Mainland Economic Cooperation: Ties that Bind?." U.S. And Cross-Straits Relations, Champaign,

Illinois, October 2000. HALL, G., J. Cappello, and S. Lambert. "Triad 2025: The Evolution of a New Strategic Force Posture." INSS Research Results Conference, Colorado Springs, CO, November 2000.

KIZER, S. "Environmental Security: Making the Case of the Intelligence Community for Monitoring and Assessment." INSS Research Results Conference, Colorado Springs, CO, November 2000.

MCCARTHY, J. "Computer Network Operations - A New Mission Area." Presentation to CINCSPACE, Colorado Springs, CO, October 2000.

MCCARTHY, J. "Leveraging Technology to Improve NATO's Defense Capabilities." Eastern Mediterranean Security Conference, Washington, D.C., October 2000.

MCCARTHY, J. "The Moral Implications of the Kosovo Operation." The Sacred and the Sovereign, Chicago, IL, October 2000.

MCLEOD, L. "From Military Observation to Peacekeeping." Conference on Globalization and Security, Denver, CO, November 2000.

PILCH, F. "Rape as Genocide." A Century of Killing, Vermillion, South Dakota, October 2000.

ROBINSON, L. "The Electoral College and the Disputed Presidential Elections." SERTOMA Club, Colorado Springs, CO, November 2000.

THOMAS, T. and Morrison, P. "Beneath the Winds: US Security Interest in the South China Sea." INSS Research Results Conference, Colorado Springs, CO, November 2000.

THOMAS, T. "Slumlords: Aerospace Power in Urban Fights." INSS Research Results Conference, Colorado Springs, CO, October 2000.

USAFA Research Points Of Contact

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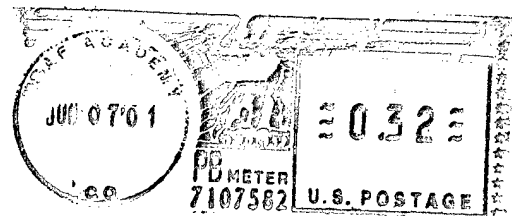
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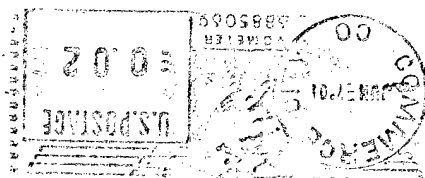
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